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ARGENTINE

WHEAT MARKETING

PRACTICES and

FACILITIES

UNITED STATES DEPARTMENT OF AGRICULTURE
Foreign Agricultural Service

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ARGENTINE WHEAT MARKETING PRACTICES AND FACILITIES

Argentina has long been one of the world's major grain producers, and exporters. Its wheat especially is depended upon as a principal foreign exchange earner.

This crop is produced primarily with mechanical equipment assembled or manufactured in Argentina; about 25 percent is imported from the United States. Some horse-drawn equipment is still used in production but almost all harvesting is by machine. About 70 percent of the wheat is bagged when harvested, and the remainder marketed in bulk.

Average wheat yield per harvested acre in 1959 is estimated at about 19 bushels--ranging from 15 to 22 bushels. Production techniques appear to be similar to those used by U.S. producers 20 to 30 years ago. For example, the farmers do not follow a crop rotation system or use fertilizers, and only about 10 percent use certified seeds.

Marketing facilities at country points appear adequate to meet normal requirements, as most of the grain moves directly to ports. However, storage facilities at terminals and ports are apparently inadequate, even for normal years. Trucks were lined up for unloading at each port visited. This was during the harvest and marketing season. At three of the ports, an estimated 500 trucks were waiting in line; at the others, there were usually 100 to 150.

Wheat is sold entirely on the basis of grade. Each producer may obtain grade certificates from buyers, country elevators, terminal elevators, or exporters. If the producer is not satisfied with the grade, he may get a final grade from a local grain board representative or send a sample to the Grain Board in Buenos Aires.

For grading purposes, the wheat growing region is divided into four zones. The wheat moves out of the ports located in each zone to world markets. The export certificate has the name of the zone, the type and the grade of wheat. This system permits importers to purchase wheat from the zone that produces the quality meeting their particular needs.

Tests run by the Grain Board's Cereal Testing and Grading Laboratory on all wheat exports are essentially the same as those used in the United States by millers and experimental laboratories. Emphasis is placed mostly on

This report represents the findings of an on-the-spot survey made in January 1960 by a wheat team consisting of C. R. Keaton, Grain and Feed Division, FAS, Herbert Hughes, Vice President, Great Plains Wheat Market Development Association, and R. M. Scoular, member of the Omaha Grain Exchange. The purpose of the study was to ascertain practices and methods used to maintain the high quality of Argentine wheat in the export market and to determine Argentina's production and export capabilities. Information was obtained from producers, country elevator operators, millers, and trade contacts at terminal and exporting points.

gluten content. A copy of the grade and analysis is sent to the importer and one to the Embassy of the country of destination. Tests are also run on each wheat variety every year. If the quality of a variety falls below a certain standard, it is ineligible for the support price.

At each of Argentina's three seaports and seven river ports, loading capacity varies from 2 to 5 ships. One seaport and one river port can load five ships at a time, while only two ports can load two ships simultaneously. Plans have been made to expand storage capacity and increase dock facilities.

Approximately 70 percent of wheat arrivals at ports are in bags. Even with conveyer belts, the handling of the bagged wheat requires an unusually large number of laborers. Most of the bags are stored in prefabricated steel warehouses; the rest--about 25 percent--are stored outside in long ricks. Some of the temporary storage facilities use tarpaulin along end and side. The ricks observed were completely covered with polyethylene sheets and tarpaulin.

The transition during January 1960 from governmental monopoly in wheat trade to a free market basis seems to have taken place rather smoothly. The most serious problem is financing. In January 1960, the current interest rate was 2 percent per month. The usual practice was to pay the producer 70 percent on delivery and 30 percent in 90 days. Farmers were not pleased with this arrangement because prior to January 1 they had been paid in full within 48 hours after delivery to the Grain Board.

Two trends in Argentine agriculture were noted: (1) Favorable livestock prices, which have resulted in increasing livestock numbers, and (2) increased pasture area and use of grain crops for pasture because of unfavorable grain prices. There was some concern by governmental officials and producers about prospective livestock prices in the latter part of 1961. Some producers were already contemplating shifts to grain crops if livestock prices decline.

Agricultural production in Argentina has a great potential. Although the techniques applied to production are not old, they are not the latest scientific methods used in some other countries. These new methods if applied to wheat and other grain crops would increase production substantially. Also, the use of improved pastures could reduce the acreage needed for livestock. Thus, more acreage would be available for grain production. The consequence would be more wheat and grains offered on the export market in competition with other countries.

Argentina Is Major Producer and Exporter

Argentina is one of the top five competitors in the world market for wheat and other grains. Of these five countries, it usually ranks third in wheat acreage harvested and yield per acre, and fourth in total production. Of total grain exports, wheat is the primary source of foreign exchange.

TABLE 1.--Wheat: Acreage, yield and production in principal exporting countries, average 1935-39 and 1945-49, annual 1952-59

Year of production	United States	Canada	Argentina	Australia	France
Harvested acreage	1,000	1,000	1,000	1,000	1,000
Average:	<u>acres</u>	<u>acres</u>	<u>acres</u>	<u>acres</u>	<u>acres</u>
1935-39	57,293	25,595	15,834	13,128	12,560
1945-49	71,024	24,558	11,432	12,662	10,354
Annual:					
1952	71,130	26,164	13,790	10,100	11,000
1953	67,840	26,383	12,345	10,751	10,430
1954	54,356	25,539	13,500	10,670	11,100
1955	47,285	22,660	10,037	10,170	11,252
1956	49,784	22,781	13,324	7,900	7,000
1957	43,806	21,117	10,858	7,500	11,534
1958	53,404	20,899	12,954	10,430	11,404
1959	53,024	23,065	10,500	11,478	10,937
Yield	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>	<u>Bushels</u>
Average:					
1935-39	13.2	12.2	14.0	12.9	22.8
1945-49	16.9	14.8	16.9	14.0	23.0
Annual:					
1952	18.4	26.8	20.3	19.7	28.2
1953	17.3	24.0	18.5	18.4	31.6
1954	18.1	13.0	20.9	15.8	35.0
1955	19.8	22.9	19.2	19.2	33.8
1956	20.2	25.2	19.7	17.1	32.1
1957	21.7	18.3	19.7	13.0	35.3
1958	27.4	17.8	18.9	20.6	31.0
1959	21.3	17.9	19.0	16.6	38.9
Production	1,000	1,000	1,000	1,000	1,000
Average:	<u>bushels</u>	<u>bushels</u>	<u>bushels</u>	<u>bushels</u>	<u>bushels</u>
1935-39	758,629	312,399	221,769	169,744	286,505
1945-49	1,202,396	362,774	193,740	177,742	238,200
Annual:					
1952	1,306,440	701,973	280,500	199,000	310,000
1953	1,173,071	634,040	227,800	197,960	330,000
1954	983,900	331,981	282,560	168,610	388,220
1955	934,731	519,178	192,900	195,600	380,850
1956	1,004,272	573,040	261,980	135,000	225,000
1957	950,662	370,508	213,500	97,600	407,200
1958	1,461,714	371,730	245,000	215,100	353,000
1959	1,128,151	413,520	200,000	190,000	425,000

TABLE 2.—Wheat: Supply and disposition, average 1940-49, annual 1940-59

Crop year beginning Dec. 1	Beginning stocks : Million bushels	Pro- duction : Million bushels	Total supply : Million bushels	Exports : Million bushels	Domestic use : Million bushels	Carryover stocks : Million bushels
Average:						
1940-49	102	214	316	80	135	102
Annual:						
1940	20	299	319	87	103	129
1941	129	238	367	79	120	168
1942	168	235	403	72	123	208
1943	208	250	458	86	177	195
1944	195	150	345	90	165	90
1945	90	144	234	51	138	45
1946	45	206	251	81	130	40
1947	40	239	279	81	128	70
1948	70	191	261	68	138	55
1949	55	189	244	101	128	15
1950	15	213	228	95	113	20
1951	20	77	97	4	88	5
1952	5	280	285	82	131	72
1953	72	228	300	112	128	60
1954	60	283	343	133	122	88
1955	88	193	281	97	129	55
1956	55	262	317	99	148	70
1957	70	213	283	75	138	70
1958	70	245	315	97	158	60
1959 1/	60	200	260	65	143	52

1/ Preliminary forecast.

From near-record wheat crop of recent years--299 million bushels in 1940--production declined to an unusual low of 77 million bushels in 1951. By 1954, it almost approached the record level, but has declined since then. The same general trend has occurred in domestic use, exports, and carryover stocks of wheat.

Exports from production of the crop year beginning December 1, 1959, are forecast at 65 million bushels. This is 33 percent below the previous year and 35 percent below the average for the 5 years ended 1958-59. Total production was 16 percent below that 5-year average but domestic use was up almost 3 percent. Carryover stocks were down 17 million bushels, or 24 percent.

The immediate outlook for Argentine wheat exports is for a slight increase during the next year or so, followed by a substantial upturn. Recently livestock prices have been very favorable because of a change in the aforo and export tax system and increased European demand. Farmers are increasing their herds and using more land area for pasture. There is some concern



Wheat combine on Argentine farm.
Motors for such combines are
imported from West Germany
or the United States.
Other parts are
manufactured in Argentina.

about a drop in prices in 1962, as supplies become more abundant and because of the possibility of reduced demand abroad. If livestock prices drop relative to grains, there will be a shift back to increased grain production, with more wheat available for export.

Production Methods Improved

Land preparation for seeding wheat in Argentina is similar to practices followed in the United States and Canada. All of the large farms have adequate tractors and other equipment for soil preparation. Some of the small farms still use horse-drawn implements. In fact, around 15 percent of the land preparation is by horse-drawn implement.

Soil testing is not customary on wheat land, and practically no fertilizers are used. The country has no facilities for producing fertilizers, and prices of imports are very high. Indications are that fertilizers are used only on vegetable and fruit crops.

Argentina's climate seems to be especially favorable for wheat and other grains. Wheat is seeded between May and August, with June and July the principal months. Harvest begins in November and continues until about the middle of January. Rainfall averages about 30 inches, with the highest proportion falling during the growing season.

Unprecedented rain during the 1959 planting season prevented seeding of normal acreage. The harvest also was affected by unusually wet weather. As a result, production in 1959 was estimated at 200 million bushels, 47 million below the previous year and the lowest since 1955.

Rust is one of the most serious problems. Damage to the late summer (January) harvest is usually more severe than to the early crop.

Considerable work has been done by companies and private individuals on breeding varieties resistant to rust.

Smut is also a problem. About 12 to 15 percent of total production has smut damage. The entire producing area is affected, with the greatest damage occurring in the northern areas. The wheat breeders are attempting to breed resistant varieties.

Insecticides are not applied to field crops, as infestation is not serious. Some of the country elevators fumigate when necessary, but this is not a general practice. Infestation in the southern part of the country is reported to be less than in the north.

Pasture of wheat.--Argentine agriculture is centered around livestock, the primary farm product. All coarse grain crops are first used as livestock pasture or forage. If permanent pastures are sufficient to meet the needs, a large proportion of the grain acreage will be harvested as grain. About 80 percent of the barley and rye and some varieties of wheat are used for pasture. Of the total planted wheat acreage since 1944, only about 80 percent was harvested. A smaller percentage of feed grains was harvested for grain.

Harvesting methods.--Practically all of the wheat production is now harvested by power-driven machinery. Combines are the most common. Stationary power-driven threshers are rare. About 50 percent of the machinery is made or assembled in the country. About 20-25 percent is imported from the United States and the remainder from Canada, West Germany, the United Kingdom, and other European countries.

Equipment and maintenance are very expensive, but the government allows a high tax depreciation rate. Also, most of the farms are large and, with labor expensive, conditions warrant the purchase of machinery. One of the main problems in harvesting is the lack of skilled machinery operators. This is especially true in custom harvesting, which makes up about 15 to 20 percent of the total harvest.

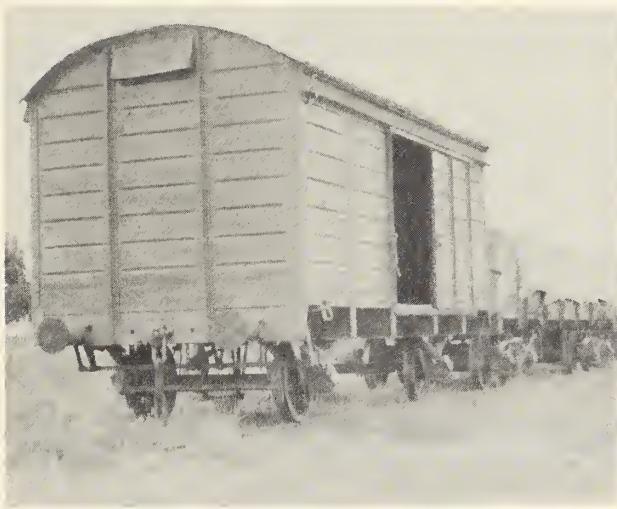
Production costs.--Cost of production is reported to vary widely between zones and from one farm to another. It is estimated that the average cost is about 82 cents per bushel on a countrywide basis, ranging from 60 cents to \$1.00 per bushel depending upon the efficiency of individual producers.

Farm credit.--Grain growers may obtain two different types of credit from the National Bank and the Provincial Bank. One type is for preparation of the fields and purchases of seeds. A producer may borrow up to \$1.75 per acre for production purposes.

The other type of loan is for harvesting, bagging, and threshing. If a grower has the necessary equipment, he may borrow up to 13 cents per bushel based on his estimated yield for wheat, oats, barley, or rye. If he does not have the proper equipment he may borrow up to 16 cents per bushel. The total credit for all purposes may not exceed 80 percent of the market value of the crop.



Truck and trailer load of bagged wheat from farm near Tres Arroyos is weighed at co-op elevator.



Standard-gage trailer loaded with grain, Nicochea. These are favored for rail shipment of grain.

The date of maturity is June 30 of each year with an interest rate of 8 percent per annum. The commercial interest rate early in 1960 was 2 percent per month.

Transportation Facilities Adequate

Transport facilities are considered to be adequate in Argentina. The long-established railroad system connects the interior concentration points with consuming centers and export markets. The highway system serves the interior concentration points, as well as competition to railroads in both domestic and export markets.

From field.--After the wheat is harvested, it is loaded into trucks or

trailers for transportation to storage. Most of the trailers are pulled by trucks or tractors; while occasionally on small farms horses may be used for transport to farm storage or local elevators.

Farm to market.--The distance to market varies from less than a mile to more than 100 miles. Country elevators are usually within 25 miles, whereas export markets may be 100 miles or more. The size of the load may vary from 2 to 4 tons with a truck capacity of about 4 tons. Each truck usually pulls a trailer with an equivalent amount. Delivery is usually to the market paying the most favorable price either locally or at the port of export.

One of the main problems in delivery at ports is unloading during the harvest season. Approximately 7 days are required to unload, varying from 1 to 14 days. Three of the ports early in January had about 500 trucks waiting to be unloaded. About 100 was said to be usual at the other seven.

The delay in unloading means additional expense for producers. After 1 day's delay the carrier is paid a flat rate per day for driver and truck, the amount depending on the size of the truck and trailer.

Railroad facilities.--Argentina has three different railroad gages:

	<u>Inches</u>
Narrow gage (1 meter)	39.37
Medium gage (1.43½ meters)	56.50
Standard gage (1.676 meters)	65.98

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The standard gage is used mostly to move wheat and other grains. The narrow gage is seldom used. Additional problems and handling costs are incurred when grain is transferred from one gage to another.

Transportation charges.--Shipping wheat by truck from the four major interior concentration points is more expensive than shipping it by rail. This is because trucks do not have as ready access to areas of collection and delivery as railroads do and because operation costs for trucks are usually higher.

Storage Facilities Expanding

Two types of storage facilities are commonly used in Argentina--one is for bulk grain, the other for bagged. Each port and interior market has facilities for both types. Usually the large grain producers also have both types, but small farmers have storage for bags only.

Total capacity.--Total January 1, 1960 storage capacity, excluding farm storage, was estimated at 13,821,383 metric tons. Of this total, slightly over 5 million tons were owned by the Grain Board and 8.8 million by grain merchants and cooperatives. In addition, farm storage is estimated at 1.4 million metric tons.

TABLE 3.--Wheat: Transportation charges to nearest points from 4 major shipping points, January 1960

Shipping route	Distance	Cost by railway	Distance	Cost by trucks
	Miles	Per metric ton	Miles	Per metric ton
From Pergamino to:				
Rosario	65	\$2.32	68	\$3.45
Buenos Aires	68	3.32	72	4.77
From Tres Arroyos to:				
Bahia Blanca	120	3.20	130	4.40
Necocheo	123	3.20	91	3.40
From Casilda to:				
Rosario	37	1.71	38	1.64
Villa Constitucion	68	2.34	71	2.43
From Cda. de Gomez to:				
Rosario	45	1.93	52	2.00
Villa Constitucion	77	2.52	85	2.69

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TABLE 4.--Grain: Total storage capacity, by grain dealers, 1960

Dealers	Bagged	Bulk	Total
	Metric tons	Metric tons	Metric tons
Merchants	6,629,785	960,697	7,590,482
Cooperatives	1,156,932	73,543	1,230,475
Total	7,786,717	1,034,240	8,820,957

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TABLE 5.--Argentine Grain Board: Total storage capacity at ports and railroad stations, July 1953

Storage capacity at railroad stations	Amount
	Metric tons
General Roca	1,383,754
General San Martin	571,743
General Belgrano	619,344
Provincia Buenos Aires	131,637
D. F. Sarmiento	1,219,787
General Bme. Mitre	914,840
General Urquiza	159,321
Total	5,000,426

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The Grain Board owns storage space for 3.1 million metric tons capacity at river and seaports. In addition, it has under construction 337,000 tons and plans for an expansion of 180,000 tons which would bring its total capacity at ports to almost 3.7 million tons. Some of the grain storage facilities operated by merchants are owned by the railroad, primarily to assure a certain amount of grain traffic. Such facilities are leased to the merchants who buy from growers, and store until enough is obtained for shipment.

A little over a third of the Grain Board's storage facilities at ports are underground silos, about a third are bulk elevators, and another third are structures for bag storage. Of the total operated by merchants and co-operatives, about 90 percent of the capacity is for bagged and 10 percent for bulk grain.

When bagged grain is stored outside, wooden or concrete bases are required. The ricks are covered with polyethylene sheets for fumigation and tarpaulin for weather protection. All stored wheat is inspected regularly to prevent infestation.

On farms.--About 70 percent of the grain is bagged when threshed. The remainder is marketed in bulk. Bag storage on farms is usually in long ricks covered with tarpaulin or in temporary wood or steel storage facilities. This type of storage is used primarily on small and medium-size farms. The larger and more highly mechanized farms use mostly bulk storage facilities.

The most widely used structures are of concrete, steel, aluminum, or wood. The structures may vary in capacity from 10 to 100 tons. Bulk storage bins are usually grouped together in four to eight silos in order to use the same central loading and unloading equipment.

There are few underground storage facilities on the farms. The major problem is the expensive equipment needed to fill and unload. Also, the cost of operation and maintenance is comparatively high.

Some of the concrete bulk storage structures are portable, having been designed especially for tenants. They are built out of concrete plates about 3 inches thick, usually 2 by 3 feet wide, fastened together with bolts. They are easily assembled and dismantled for transportation.

Underground.--The original purpose of underground silos was to safeguard grain in case of war, but they have been used for storage during years of good harvests. Present underground storage capacity owned by the Grain Board is estimated at 1.2 million metric tons. An additional 304,000 tons capacity was under construction in early 1960.

Each underground silo has a storage capacity of 10,000 metric tons. They are approximately 400 feet long, 40 feet wide, and 15 feet deep and are divided into five compartments with a capacity of 2,000 metric tons each. When they are filled, the grain is about level with the ground. The outside layer of the silo is a 20-inch thick wall of concrete, followed by a layer of

brick, tar paper, and stucco on the inside. Some of the earlier silos were improperly constructed and losses were quite high. If the silo is properly constructed, it is quite satisfactory, with a life of 50 to 60 years. It is estimated that grain can be stored in these structures for 15 to 20 years. However, the grain must have less than 13 percent moisture for satisfactory storage.

TABLE 6.—Small farm silos: Number and capacity, 1960

Area	Number	Capacity
		: Metric tons
Provincia de Buenos Aires	1,826	1,008,033
Provincia de La Pampa	20	6,650
Provincia de Santa Fe	4	2,530
Provincia de Cordoba	4	2,155
Warehouse and underground silos		407,270
Total	--	1,426,638

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Insect control.—The types of damage to stored grain are similar to those in the United States. The most serious problem, of course, is weevils. The grain is treated as needed with methyl bromide fumigant. The Grain Board has some "hospital elevators" to which grain is moved for the purpose of fumigation. If the grain is seriously affected, it is moved into these elevators for treatment.

The bagged grain is stored in long ricks inside permanent storage facilities as well as temporary structures. The stacks, or ricks, are covered with polyethylene for fumigation; this is kept on for further fumigation or until the grain is shipped.

Cleaning facilities.—Each port has some cleaning and drying facilities. The new country elevators also have some type of cleaning facilities but usually none for drying. If the grain is wet, it is moved directly to the port areas. The government has plans to increase the number of cleaning and drying facilities at country points as well as at ports.

Agronomic Research by Private Trade

The universities and experiment stations do very little plant breeding. Their activities are confined primarily to the study of plant insects, diseases, and their control. Thus, the breeding program is conducted almost entirely by individual firms. A farmer in Rosario zone, Mr. Klein, is one of the principal breeders. Of the approved varieties grown, he has developed nearly 75 percent.

Before a variety is approved for government price support, it must have 3 years of field experience, be thoroughly tested and analyzed in the

TABLE 7.—Argentine Grain Board: Storage capacities at ports by type of storage, 1960

Ports	Grain elevators	Under-ground silos	Permanent sheds	Emergency sheds	Total
	Metric tons	Metric tons	Metric tons	Metric tons	Metric tons
Current					
Rosario	299,070	332,800	136,700	26,000	794,650
San Lorenzo	20,930	323,260	143,000	6,000	493,190
Buenos Aires	240,280	--	67,900	--	308,180
La Plata	10,390	--	53,400	--	63,790
Ing. White	161,510	--	--	24,800	186,310
Galvan	18,560	--	33,100	18,610	70,270
Quequen	60,320	300,000	55,320	48,810	464,450
Mar del Plata	2,000	--	31,500	6,000	39,500
V. Constitucion	57,110	175,000	37,900	--	270,010
San Nicolas	44,800	--	44,790	--	89,590
Ramalio	--	--	8,100	--	8,100
San Pedro	--	90,050	30,900	--	120,950
Santa Fe	75,950	--	80,480	--	156,430
C. del Uruguay	3,310	--	31,860	--	35,170
Gualeguaychu	--	--	2,400	--	2,400
Diamante	--	--	22,550	--	22,550
Victoria	--	--	5,570	--	5,570
Bajada Grande	--	--	3,800	--	3,800
Total	994,230	1,221,110	789,270	130,300	3,134,910
Under construction					
Ing. White	--	304,000	--	--	304,000
Quenquen	33,000	--	--	--	33,000
Total	33,000	304,000	--	--	337,000
Planned					
Rosario	75,000	--	--	--	75,000
Ing. White	20,000	--	--	--	20,000
Mar del Plata	25,000	--	--	--	25,000
Ramalio	20,000	--	--	--	20,000
Diamante	20,000	--	--	--	20,000
C. del Uruguay	20,000	--	--	--	20,000
Total	180,000	--	--	--	180,000
Grand total	1,207,230	1,525,110	789,270	130,300	3,651,910

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government laboratory, and meet certain milling and baking standards. After approval, the foundation seed may be sold to farmers and to seed stock producers similar to U.S. certified growers. These growers are permitted to sell third-generation seed, and demand has been good enough to enable them to obtain premiums over current market prices. Approximately 10 percent of the growers buy certified seed each year.



Trailer load of bagged wheat from a farm awaits unloading at co-op.



Permanent storage structures at port for bagged wheat. At left, temporary storage for grain.



Left, prefabricated steel warehouse for bagged grain, at co-op near Tres Arroyos. Below, one of the few co-op elevators at country points. This one serves 25-mile radius near Nicochea.

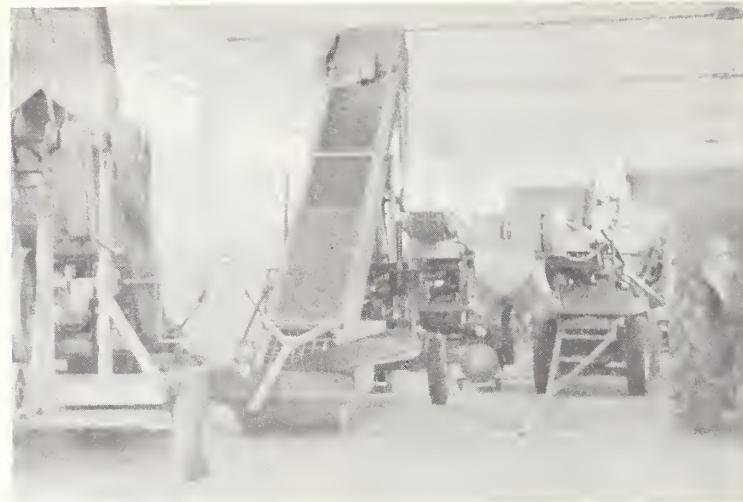


Typical storage structures on Argentine farms, and at country points and at central markets.





Left, underground storage silos for bulk grain. They are 400 feet long, 40 wide, and 15 deep. Capacity, 10,000 metric tons. Below, close-up of one of the silos.



This equipment is used to unload grain from underground silos.

The results of this system have been quite good. For example, in the Rosafe zone in the crop year 1952-53 only about 16 percent of the wheat produced graded hard, but by 1958-59 the percentage had increased to 61. In Bahia Blanca, the principal wheat raising zone, 63 percent graded hard in 1952-53 and 90 percent in 1959. In Buenos Aires zone, the percentages were 32 and 83 percent, and in Entre Ríos 25 and 56. It is estimated that 79 percent of total production in 1959-60 was of hard varieties.

Laboratory tests are run on each variety produced in each of the four zones every year. If the quality of a variety drops below the minimum standards for 3 years, it is ineligible for government support. The varieties by types that were eligible for price support in 1958-59 follow:

Hard types	Semi-hard types
Bahiense F.C.S.	Benvenuto Inca
Buck Araucano	Benvenuto 3085
Buck Maipu	Benvenuto Sabina
Buck Necochea	Buck La Dulce
Buck Quequen	Buck Miramar
Buck Sarmiento	Buck Pampero
Buck Oriente	Buck Tandil
Benvenuto Mayo	Belgano S.F.
Buck Atlantico	Eureka F.C.S.
Buenos Aires 105	Guatrache Hucal M.A.G.
El Gaucho F.A.	Klein Alberti
Klein Colon (Res.J.N.G. 683/58 29/5/58)	Klein Amalia Klein
Klein Aniversario	Klein Cimeta
Klein Rendidor	Klein
Klein 157	Magnif Entrerriano MAG.
Klein Condor	Magnif Guarani MAG.
Klein Exito	La Prevision 25
Klein Lucero	Olaeta Cordial
Klein Orgullo	Olaeta Artillero
Klein Petiso	Olaeta Calandria
Klein Centella	Olaeta Gorron
Klein Credito	Olaeta Libertad (Res.J.N.G. 161/57 2/10/57)
Massaux No. 5	Massaux No. 3
Massaux Don Rene	38 M.A.
Olaeta Hornero	Superhard Blackhull
Olaeta Halcon	Rafaela M.A.G.
Olaeta Aguila	Pergamino Gaboto MAG.
Olaeta General Guemes	Tezanos Pinto Criollo (Res.J.N.G. 683/58-29/5/58)
Olaeta Rumbo (Res.J.N.G. 161/57 2/10/57)	O. Chacarero
Reliance Selec. Klein	
Sinvalocho M.A.	
Sureno M.A.	
Guatrache Puelen M.A.G.	
General Roca M.A.G.	
Vilela Sol (Res.J.N.G. 683/58-29/5/58)	

Department of Commerce, October 1958

Marketing Methods Improving

Argentina's methods of marketing have not changed greatly during the past few years, nor have the channels of marketing. The government played a dominant role in the market until the mid-1950's.

Marketing area.--A 400-mile semicircle centered on Buenos Aires would take in 90 percent of the wheat production in Argentina. In that area there are few grain-producing sections over 200 miles from a shipping port. In fact, a large percentage of the production is within 100 miles of a port. A natural result is that excess production moves directly to the port outlets.

It is difficult to explain why railroads have not continued to develop. Prior to 1920 most of the grain moving into commercial channels was stored in bags and moved by railroads, the railroads operating concentration warehouses along the right of way as a public service. Under government ownership, railroad development has been slow. Equipment, rails, and right of way are in poor condition and railroads are handling less and less grain each year. On the other hand, trucks are moving more each year--now, about 70 percent of the grain.

Method of sale.--The large wheat producers usually sell directly to exporter or miller. The average and smaller producers usually sell to local elevators or country merchants. When the contract is made, the buyers usually pay 60 to 70 percent of total value and the remainder 30 days after delivery. The sale is always subject to grading.

Prices are quoted on the basis of the delivery in bags, although the seller has the option to deliver in bulk or bags. If delivery is made in bulk, a discount of about \$3.00 per ton is deducted to cover the cost of the bags.

Grain buyers.--There are 3,692 registered grain buyers in Argentina. Of

this total, approximately 1,633 are registered acopiadores (upcountry buyers). Besides grain, they usually handle such other farm commodities as wool, hides, and oilseeds, and often sell machinery, groceries, and other farm supplies. Many of them own or rent warehouses to store small lots of grain. Some of the upcountry buyers also act as agents between the farmer and the miller or exporter. In most cases the grain moves directly from the farm to the mill or port without stopping at the local level.



Taking sample of bagged wheat at co-op elevator near Bahia Blanca.

TABLE 8.—Registered grain merchants: Types of buyers and number of firms, Nov. 30, 1959

Type of buyers	:	Number of firms operating
Local buyers	:	1,633
Commission men	:	334
Brokers	:	45
Exporters	:	285
Millers	1/	170
Merchants and elevator buyers	:	5
Processors	:	148
Small merchants	:	393
Cooperatives	:	689
Total	:	3,692

1/ Includes corn mills.

Department of Registration and Supplies.

At the established markets in Buenos Aires, Rosario, and Santa Fe, there are 379 registered brokers and consignment merchants, but only about 100 actively contact the upcountry buyers. Their function is about the same as in this country. They find the best outlet for their country accounts by keeping in close contact with the mills and exporters and knowing their needs.

Domestic flour mills.--Argentina has 152 registered flour mills with a capacity of 3.2 million metric tons. Also, it has 18 corn mills for food and 148 other processors of various kinds, mostly small feed grinders for local trade. Included in the registration are about 393 small retailers and 689 cooperatives. Among the processors are quite a number of flaxseed and sunflower seed crushing plants, and in the export and dealer registration there are several who deal only in oil.

Coarse grain trade.--Corn was once a big export item but has not been so important in recent years as production has declined and more has been consumed domestically. Barley, oats, rye, and other small grains rarely move into commercial channels except near Rosario and Buenos Aires. These grains are largely traded back and forth in the country through wholesale and retail establishments.

Local cash market.--One of the three markets for wheat is the local cash market. The other two are the terminal and the futures markets.

In Buenos Aires the local cash market deals in grain, field and vegetable crops, hay, and almost any other commodity grown on the farms. It has about 2,000 members, about half of whom are active. Trading is usually in small lots of 2 tons up to 150 tons, and trade is on the basis of a sample which could represent grain stored in Buenos Aires, in a nearby town, or on a farm. The local cash market affords a place where producers can sell grain

not qualifying for government support. There is some talk in the grain trade of combining this market with the futures market.

TABLE 9.--Flour mills: Number and capacity, by province, January 1960

Province	Mills	Firms	Capacity, 24 hours	Annual capacity
	Number	Number	Metric tons	Metric tons
Capital Federal	19	19	3,042	698,230
Buenos Aires	47	37	3,449	797,860
Cordoba	30	21	3,180	711,438
Santa Fe	21	16	2,769	603,617
Entre Rios	18	14	972	179,264
San Juan	7	6	97	14,075
La Pampa	4	3	355	79,735
Santiago del Estero	2	2	46	9,000
Mendoza	1	1	150	39,744
Salta	1	1	30	5,787
San Luis	1	1	130	29,684
Tucuman	1	1	9	717
Total	152	122	14,229	3,169,151

Department of Registration and Supplies.

Terminal markets.--Most of the brokers, commission merchants, and export and mill buyers are located in Buenos Aires, Rosario, and Santa Fe, with the largest percentage in Buenos Aires. The merchandising of grain at this level could be roughly compared with that in the United States with one important difference. There are no large interior country elevators or subterminals. The larger facilities are all adjacent to waterways, and the merchandising of wholesale grain involves movement more directly from farm and country location to mills and port elevators. When the government had complete control of the grain business, it dealt with the commission merchant, the broker, and country grain buyer. Each dealer received a fixed compensation for his services.

Futures market.--The futures markets are similar to those in the United States. The volume of trade over the years has gradually declined and the futures market does not furnish a safe hedge as in the United States. It is, however, used as a hedge for exports and local mill buyers and, to some extent, international speculation.

Credit for trade.--The free market trade in wheat has placed an additional requirement on the limited credit facilities. The commercial interest rate in wheat and other grains in early 1960 was 2 percent per month. Even at this high rate it was reported to be difficult to obtain needed funds.

Grain standards.--Prior to 1935 all Argentine grain was sold on a free market basis. There were no official grain standards. The domestic trade



Above, bagged wheat is unloaded by conveyor belt, and sample is taken. At left, inspector samples wheat at port before it goes in temporary storage.

was primarily by sample, and the export trade was conducted mainly by description of the area in which the wheat was grown. Grain standard laws were first passed in 1935. These were revised and improved and slowly strengthened through 1944, but were not made obligatory. They were used only as suggested standards, principally to arrive at a loan value to the farmers.

With the end of World War II, surpluses accumulated and prices declined. Since grading had become more or less standardized, it was a short step to official government grades. With the 1943-44 crop year, flax standards were made obligatory; in 1947-48 this was done for wheat, and in 1958-59 for all other grains.

Grades.—Wheat is identified by zone, type, grade, and crop year. There are four zones, two varieties, and three grades. Principal features of the Argentine wheat grades follow:

A. Zones

- (1) Rosa Fe - The Rosario and Santa Fe growing areas are located northwest of Buenos Aires and west of the Parana River. Production of this zone is approximately 30 percent of the wheat, of which 61 percent grades hard.
- (2) Buenos Aires - A strip about 75 miles in width running west from Buenos Aires. This zone produces about 20 percent of the wheat, of which 80 percent grades hard.
- (3) Bahia Blanca - This zone is generally south and southwest, starting approximately 100 miles south of Buenos Aires, including La Pampa, and extending approximately another 200 miles to the coastal area which includes the ports of Bahia Blanca, Necochea, and Mar del Plata. The zone produces about 40 percent of the wheat, of which 91 percent grades hard.
- (4) Entre Rios - The State of Entre Rios is located northeast of the State of Buenos Aires, north of Parana River, and west of Uruguay. This zone produces about 10 percent of the wheat, of which 56 percent grades hard. All of the wheat produced here is used domestically.

B. Types - There are two types of wheat in each zone--hard and semi-hard.

C. Grades - There are four grades of wheat for each type (No. 1, No. 2, No. 3, and sample) based on test weight, foreign material, dockage, etc.

It is possible to have 28 different grade certificates which include one sample grade in each zone. Some examples would be:

Rosa Fe zone, hard type, grade No. 3
Buenos Aires zone, semi-hard type, grade No. 2
Bahia Blanca zone, hard type, grade No. 1
Entre Rios zone, semi-hard type, grade No. 1

The hard wheat types cannot contain more than 10 percent semi-hard varieties. The No. 1 grade must weight approximately 61 pounds, the No. 2 about 58 pounds, and No. 3 about 56 pounds. Sample grade is used for wheat that does not come up to these grades and is ineligible for price support.

The Argentine system of grading permits the maintenance of identity to importing countries. Since quality may vary from one zone to another, the buyer may purchase from the zone by the grade and type that meet his requirement. The natural location of ports and system of grades also aids in maintaining quality throughout the marketing process. Also, importers are reported well satisfied with the grading system.

Inspection and grading.--Since 1944, Argentina's grain grading laboratory has been a branch of the National Grain Board with headquarters and main laboratory in Buenos Aires.

The laboratory is equipped to grade and run tests on the milling and baking qualities of wheat. In addition to the usual test weight, foreign

material, and dockage, its analysis includes quality control, farinograph, and other gluten tests with complete variety analysis. However, protein analysis is made for gluten quality, reliance being placed entirely on area and variety.

TABLE 10.—Wheat, hard and semi-hard: Grade and grade requirements

Grade:	Condition:	Minimum amount of grain per bushel:	Maximum tolerance of foreign material, broken & damaged grain:	Total Damaged kernels & adulteration:	Maximum tolerance of smaller grains:	Maximum tolerance of smutty grain:	Color:
1	Natural & healthy and dry:	61	0.5	3	5	0.10	Superior
2	do	58	1.0	4	10	.20	Normal
3	do	56	1.5	5.5	15	.30	Inferior

The Inspection Department of the Grain Board has branches throughout the grain producing area. A large percentage of Argentine grain has a grade established before leaving the farm or country shipping point. Since December 15, 1959, grades have been obtainable by taking samples to the regional Grain Board representative, or the main office in Buenos Aires, nearby cooperatives or to the local dealer (acopiador). The regional or main office has samplers who take samples of large individual lots on request. If a producer is not satisfied with the grade given his wheat, he may send a sample to the Grain Board and obtain a grade that will be final.

Each cargo of exported wheat is graded by the Grain Board agency. A representative of the laboratory takes samples from the belt while the ship is being loaded. After each hold is filled, five probes are taken. All samples are mixed and a composite is obtained. This sample is used by the laboratory of the Grain Board to make its various tests and analysis.

The government grade certificate is an important and quite detailed document, as the government assumes the responsibility for the quality of exports. In addition to grade of the entire cargo, a grade of individual holds and compartments is shown by location on a diagram of the ship. A copy of the grade certificate and analysis is supplied to the Embassy of the importing country.

The government grading laboratory also arbitrates disputes between buyers and sellers, both at the country and terminal level. It analyzes the

sample, gives grade and quality, and also recommends premiums and discounts.

Grade determination.--The grade determination and laboratory analysis are performed free. A complete analysis is made on all exports. In addition, grade and quality analysis are determined for farmers, buyers, millers, storage purposes, settlement of disputes between buyer and seller and for controlling secondary sales.

Grading of wheat is performed by trained personnel. The Grain Board provides regular classes for employees on each method used in determining grade and quality. The length of the training period may vary from 3 weeks to 3 months depending on the type of test performed.

When a sample is received by the laboratory, it first goes through the mixer in order to assure a uniform sample. It is then weighed into two 50-gram samples. One of the samples is used for grade determination and the other is retained as a check.

In grading, the grains are grouped together according to variety. The other grains and foreign material are also grouped together. The grade, based on physical appearance, mixtures, and type of wheat (hard or semi-hard) is determined in line with the requirements in table 10 and the certificate of quality and commercial analysis. Each sample grade is checked by a second group of graders.

Laboratory tests on quality are in accordance with the certificate of quality on page 23. Special emphasis is placed on gluten content although protein analysis is also provided. Copies of the certificate of commercial analysis and quality certificate are provided to the importer and the Embassy of the purchasing country.

Government trade in grains.--All private grain handling facilities were expropriated for government use in 1944. In April 1946, legal title was taken by the government. Much litigation followed but settlement values were finally established. The government then became the sole operator of all facilities and fixed prices at which producers must sell. Under this system, the farmer sold his grain to the government or domestic mills at a fixed price for the grade and payment was received within 48 hours. The government would then sell to domestic mills or exporters. The port or location of delivery was by agreement with the buyer. Prices were based on delivery Buenos Aires with fixed differentials established for other port deliveries and interior locations.

In the latter part of the 1950's, the domestic trade operated on a free market, while the export trade was controlled by the Grain Board. In July 1959, the Argentine Government announced that beginning with the 1959-60 wheat crop, the wheat trade would be free of controls. The Grain Board, however, would continue to maintain guaranteed minimum producer prices for wheat. By the latter part of January 1960, the transition seemed to have been smooth. The trade has been active for the past 15 years in obtaining its supplies from the government. They now are faced with a different supply situation and must make new contacts to accumulate stocks. Some of the larger exporters

ARGENTINE REPUBLIC

Ministry of Agriculture and Livestock

- - - - -
National Grain Board
- - - - -

QUALITY CERTIFICATE OF ARGENTINA

W H E A T

Certificate No. _____

Exporter: _____

Port of shipment _____ Location _____

Name of ship _____ Registration _____

Warehouse _____ Destination _____

Total weight in kilograms _____ Bulk _____ (Bags _____)
Bagged _____ (Brand _____)

Analysis No. _____

(1) Crop-year _____	(2) Zone _____	(3) Grade _____ (Hard _____ % (Semi-hard _____ % (Off type _____ %
(4) Protein _____ %	(5) Type _____	(6) Test weight _____ (_____) _____
(7) Damaged by heat _____	(_____) _____	
(8) Rye and off type wheat (50%) _____		
(9) Foreign material without value _____	(_____) _____	
(10) Foreign material with value (at 50%) _____		
(11) Broken grains (at 50%) _____	(_____) _____	
(12) Damaged grain (excluding crushed) _____		
(13) White belly grain _____	(_____) _____	
(14) Grains of smut damage _____		
(15) Grains damaged by insects _____	(_____) _____	
(16) Grains crushed _____		
(17) Weed seeds 100 grs. _____	(_____) _____	

Observations:

Ministry of Agriculture and
Livestock, Argentina

No. _____

National Grain Board

W H E A T

CERTIFICATE OF COMMERCIAL ANALYSIS

Buenos Aires _____ (Date) _____

Sir(s) _____

Seller _____

Buyer _____

Crop-year _____ Bags _____ of _____ Kg.

Ticket No. _____ Seal _____

Location _____ Zone _____

Sample No. _____

THE NATIONAL GRAIN BOARD certifies that the above sample contains the following:

Rye and off type wheat (50% maximum)	%	%
Damaged by heat _____	:	:
Foreign material without value _____	:	:
Foreign material with value _____	:	:
Broken grain (at 50%) _____	:	:
Damaged grain (excluding crushed) _____	:	:
Total foreign material, damaged and broken grains	:	:
White belly grain _____	:	:
Grains of smut damage _____	:	:
Grains damaged by insects _____	:	:
Grains crushed _____	:	:
Weed seeds (100 gramme maximum) _____	:	:
Weight _____ Type _____ Grade _____		

Observations:

Arbitrage

Fee \$ _____

are bypassing the brokers and are buying directly from producers and country elevators.

The major problem of the free market trade in wheat in early 1960 was financing. With an interest rate of 2 percent per month and the supply of loanable funds short, purchases were usually made from farmers on the basis of 60 to 70 percent payable when delivered and the remainder in 90 days. Currently, prices paid producers for wheat depend upon the type of credit arrangements that can be obtained.

Producers are generally dissatisfied with the present free market system. For the past 15 years they had become accustomed to receiving full payment from the government within 48 hours after delivery. Government officials are confident that the new system will be satisfactory in a short time.

Export Trading Freed

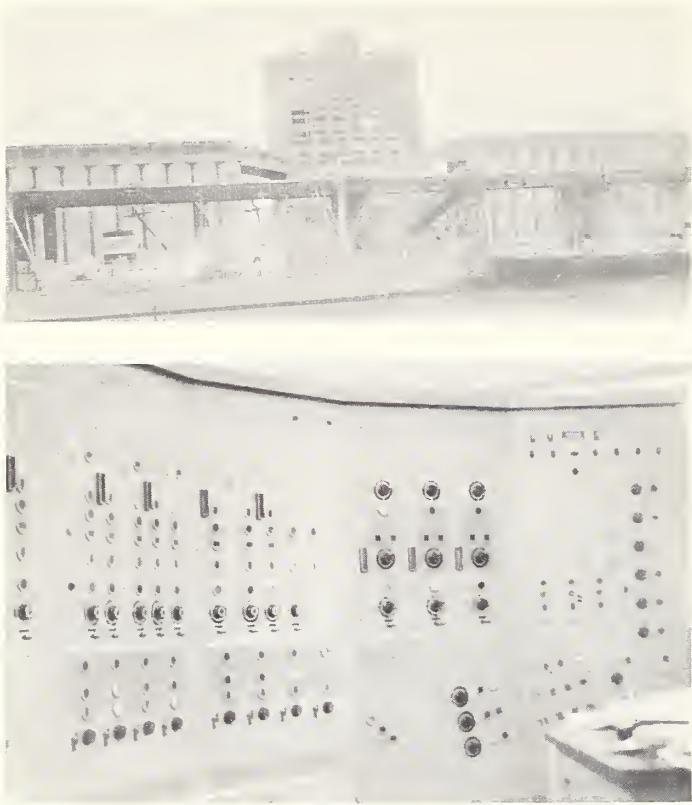
The government has made several changes in recent years to allow free domestic and export trade. Although trade is free, the Grain Board still owns and operates all port facilities. The shippers pay a set charge for loading; one of these is for constructing additional facilities. The expansion of all port capacities is either under way or planned.



Temporary storage for bagged wheat, near the port of Mar Del Plata, is covered first with polyethylene and then with tarpaulin.

Export trading.--Argentina has 285 registered exporters, but only about 25 handle much volume of grain and of these about 10 account for 85 to 90 percent of the total grain exported. Since private facilities were expropriated, exporters work through government facilities on a fee basis. This presents some very difficult problems. For example, at the port elevator in Buenos Aires the exporters agree among themselves on the basis of their historical business operation how much space each should have in order to present a united front to the government Grain Board which in turn allocates the space about as requested.

There is also difficulty in binning, so handling problems are a regular occurrence. A tremendous amount of man labor is involved in bagged grain



Port of Buenos Aires. Its export facilities can handle grain for five 10,000-metric-ton ships. Just above, part of control board for the automatic electronic loading equipment at the port that follows movement of grain from storage bin to ship hold.

annually. Other usual destinations in South America have been Chile, Paraguay, and Peru. European countries have always been steady customers. The largest shipments have been to the United Kingdom, followed by West Germany, the Netherlands, and Belgium. In recent years, no sales have been made to Japan, India, and Egypt.

Tax and charges.--There are 12 different charges on wheat exports amounting to 37.2 percent of the total f.o.b. price. The export tax is the largest, amounting to 20 percent. Each tax is allocated for a particular purpose. These charges bridge the gap between the producers and the export price.

Flour exports.--Exports of flour from Argentina reached a peak of 179,000 metric tons in 1945 and declined to only 5,000 tons in 1949. They increased for the next 2 years, then declined to 2,000 tons in 1952. Since then they have fluctuated widely, averaging 38,000 metric tons during the last 6 years. The primary reason for the low volume of flour exports is that the markets in Europe and Brazil have adequate milling facilities and prefer to buy grain. There are, however, other sales over the open border by small dealers to Bolivia, Brazil, Paraguay, and Uruguay that are not reported to the government and are not included in the official flour export statistics.

handling, especially after grain arrives in ports. (In order to conserve foreign exchange, only 15 percent of total exports can be in bags.) Therefore, since 70 percent of port arrivals are in bags, 55 percent must be dumped in bulk bins for export. Argentina exports its highest quality wheat. It was estimated that 98 percent of exports would grade No. 1. The remaining 2 percent would grade a high No. 2.

Exports by country of destination.--Argentine wheat exports for the past 10 years have averaged almost 2.4 million metric tons. During 2 of the years, exports were in excess of 3 million tons and for 2 years were below 1 million when production was low.

Brazil has consistently imported the largest quantity--nearly a million tons

TABLE 11.—Wheat: Exports by country of destination, marketing year 1949-58

Country of destination	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Metric tons									
Austria	7,150	52,508	4,445	2,798	106,277	174,318	108,062	66,566	67,245	10,713
Belgium	—	—	—	—	—	36,963	44,965	—	—	63,901
Czechoslovakia	—	—	—	—	—	57,265	70,192	40,215	16,572	—
Denmark	—	—	—	—	—	53,441	73,932	4,400	—	19,799
Finland	15,200	—	—	—	—	—	—	—	—	—
France	20,038	22,721	—	2,600	—	128,001	149,662	12,300	—	58,374
Germany, West	10,484	18,035	—	311,766	435,393	376,205	214,598	381,788	302,301	—
Germany, East	—	—	—	—	—	—	—	—	—	—
Hungary	—	—	—	—	—	9,350	8,000	—	—	—
Italy	348,035	555,142	48,359	225,497	88,437	506,615	285,019	346,549	90,243	13,055
Malta	—	—	—	—	15,135	—	—	—	—	—
Netherlands	18,695	42,049	6,760	—	140,731	199,791	216,885	168,082	101,405	156,217
Norway	—	—	—	—	—	—	33,048	22,607	6,980	6,450
Poland	—	—	—	—	50,739	225,151	8,263	—	—	—
Portugal	38,541	—	—	—	—	—	—	—	—	—
Spain	108,603	—	—	—	—	—	—	—	—	2,708
Sweden	48,474	30,000	—	—	—	6,800	1,587	—	4,800	800
Yugoslavia	—	—	—	—	—	—	—	—	—	—
Switzerland	46,020	66,438	—	—	81,729	44,023	7,010	36,188	13,500	1,000
United Kingdom	—	46,110	1,886	—	352,611	232,817	387,049	264,474	283,702	300
Bolivia	—	—	—	—	—	—	—	—	3,000	483,094
Brazil	996,018	1,061,644	409,454	296,434	1,115,447	883,357	852,787	1,039,869	732,906	16,500
Chile	20,245	58,120	14,135	—	151,813	253,017	105,726	98,560	194,494	—
Paraguay	34,835	41,593	45,648	18,200	49,986	53,852	21,965	27,988	59,403	55,838
Peru	26,987	46,002	67,829	11,372	163,351	153,444	177,351	150,373	77,050	80,349
Uruguay	100	—	—	—	—	—	—	—	—	—
India	340,623	523,957	143,451	242,568	15,788	—	—	—	—	—
Japan	176,005	63,010	—	216,204	161,638	41,754	—	—	—	—
Egypt	—	9,990	5,324	—	—	—	—	—	—	—
Lebanon	—	—	—	—	—	1,700	—	—	—	7,875
Madeira Islands	—	—	—	—	—	—	—	—	—	6,907
Africa 1/	—	56,097	27,932	—	26,522	8,308	21,639	26,088	38,245	41,484
China	—	—	—	—	—	11,548	—	—	—	—
Total	2,380,576	2,872,262	815,979	796,869	2,953,061	3,554,524	3,044,541	2,668,219	2,086,033	2,760,618

1/ Countries not specified.

TABLE 12.--Wheat: Effective export charges and taxes, January, 1960

Type of charge	Amount
For technical purposes	1.5
For construction of elevators	1.5
Insurance and storage receiving, loading, labor	1.0
Charge for bulk delivery to meet basic standard of bagged grain :	2.0
Interest and financing	1.0
Export tax	20.0
Sales tax	8.0
Excess profit tax9
Support of Grain Board	1.0
Statistical services3
Total	37.2

Junta Nacional de Granos.

TABLE 13.--Wheat flour: Exports, averages 1930-54, annual 1950-59

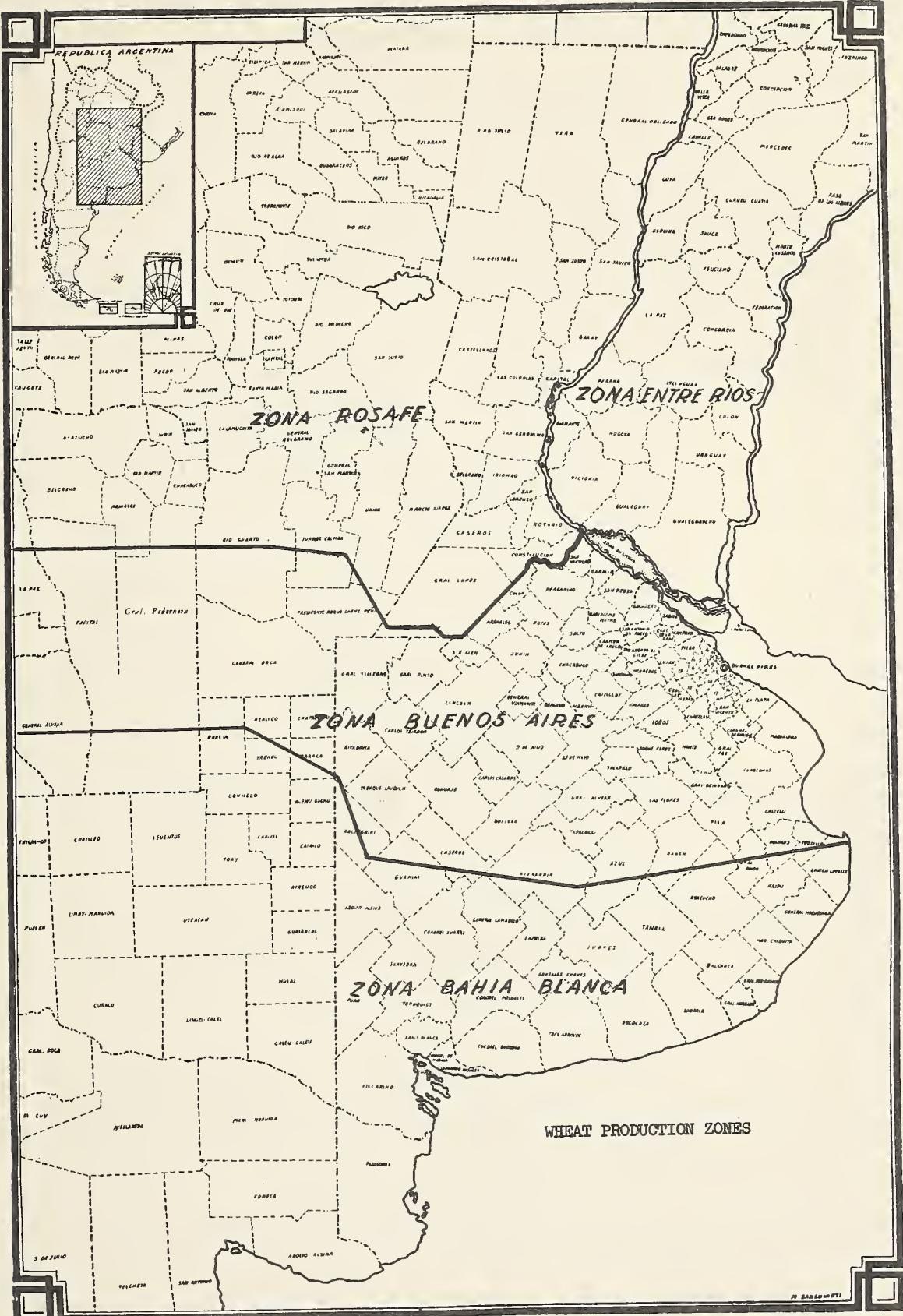
Year	Amount	Year	Amount
Average:	1,000 metric tons	Annual:	1,000 metric tons
1930-34	91	1952	2
1935-39	89	1953	6
1940-44	69	1954	76
1945-49	52	1955	70
1950-54	25	1956	31
Annual:		1957	16
1950	15	1958	29
1951	26	1959 1/.....	26

1/ January-October.

Junta Nacional de Granos.

Carriers.--Wheat shipments are primarily in foreign bottoms. Only about 20 percent is moved in Argentine ships, but there are plans to increase the quantity and quality of the merchant ships. The other 80 percent of the exports are contracted on the world market. The average freight cost to European destinations is \$8.00 per metric ton.

Trade agreements.--Argentina has only one trade agreement; this is with Brazil. Under this agreement, Argentina is to supply 1 million tons each year, and receives in return coffee, timber, steel, and other products. Government officials are attempting to sell as much as possible outside of agreements in order to obtain freely convertible currencies.



Official Business

USDA, Library
Beltsville Branch
10-9-59 Plant Industry Sta.
FAC-L Beltsville, Md.

APPENDIX

The following is the result of analysis of samples taken in each of the four wheat growing zones of Argentina. The analysis was made by the Agricultural Marketing Service, Grain Division, United States Department of Agriculture.

Buenos Aires zone.--No. 1 dark hard winter wheat test weight 61.4 pounds, total damage 2.0%, foreign material 0.3%, dark, hard, and vitreous kernels 80.0%, shrunken and broken kernels 0.4%, other classes none.

Entre Rios zone.--No. 2 dark hard winter wheat test weight 60.8 pounds, total damage 3.0%, foreign material trace, dark hard and vitreous 77.0%, shrunken and broken 0.9%.

Bahia Blanca zone.--No. 1 dark hard winter wheat, weevily test weight 61.1 pounds, total damage 2.0%, foreign material 0.1%, dark hard and vitreous 80.0%, shrunken and broken 1.2%.

Rosafe zone.--No. 2 hard winter wheat test weight 60.4 pounds, total damage 2.5%, foreign material 0.5%, dark hard and vitreous 60.0%, shrunken and broken 0.7%.

